

Claims

1. A rotary cutting apparatus for mowing lawns using a plurality of small blades with their plane of rotation rotated between 1 and 90 degrees from the horizontal plane of rotation.
2. A grass guide, working in conjunction with the plurality of small blades in claim 1, which bends and constrains movement of the incoming grass, thereby making it easier to cut the grass.
3. A lawnmower using the rotary cutting apparatus of claim 1, with its plane of rotation adjustably rotated among or between some or all degrees between 1 and 90 and the grass guide of claim 2, wherein a plurality of small electric motors are used for driving the rotary cutting apparatus of claim 1. The rotation of the small blades from the horizontal plane of rotation working in conjunction with the grass guide reduces the size of the blade's cutting area. Additionally, by bending the grass, the grass guide constrains the movement of the grass, thereby making it easier for the plurality of blades to cut the grass. Another advantage is the utilization of a plurality of small blades, which results in a significant savings in required rotational kinetic energy due to the large reduction in mass of the plurality of blades from that of a conventional lawnmower blade.
4. A lawnmower using the rotary cutting apparatus of claim 1, with its plane of rotation fixed at a single degree between 1 and 90 and the grass guide of claim 2, wherein a

plurality of small electric motors are used for driving the rotary cutting apparatus of claim 1. The rotation of the small blades from the horizontal plane of rotation working in conjunction with the grass guide reduces the size of the blade's cutting area. Additionally, by bending the grass, the grass guide constrains the movement of the grass, thereby making it easier for the plurality of blades to cut the grass. Another advantage is the utilization of a plurality of small blades, which results in a significant savings in required rotational kinetic energy due to the large reduction in mass of the plurality of blades from that of a conventional lawnmower blade.

5. A lawnmower as set forth in claim 3 or 4, will be safer due to the use of a plurality of small blades and plurality of small electric motors.
6. A lawnmower as set forth in claim 3 or 4, will be smaller due to the use of a plurality of small blades and plurality of small electric motors.
7. A lawnmower as set forth in claim 3 or 4, will be lighter due to the use of a plurality of small blades and plurality of small electric motors.
8. A smaller and lighter mower as set forth in claims 6 and 7 respectively, will be easier to operate.
9. A smaller and lighter mower as set forth in claims 6 and 7 respectively, will be easier to store.

10. A lawnmower as set forth in claim 3 or 4, will be quieter due to the use of a plurality of small electric motors.
11. A lawnmower using the rotary cutting apparatus of claim 1, with its plane of rotation adjustably rotated among or between some or all degrees between 1 and 90 and the grass guide of claim 2, wherein a single electric motor is used for driving the rotary cutting apparatus of claim 1. The rotation of the small blades from the horizontal plane of rotation working in conjunction with the grass guide reduces the size of the blade's cutting area. Additionally, by bending the grass, the grass guide constrains the movement of the grass, thereby making it easier for the plurality of blades to cut the grass. Another advantage is the utilization of a plurality of small blades, which results in a significant savings in required rotational kinetic energy due to the large reduction in mass of the plurality of blades from that of a conventional lawnmower blade.
12. A lawnmower using the rotary cutting apparatus of claim 1, with its plane of rotation fixed at a single degree between 1 and 90 and the grass guide of claim 2, wherein a single electric motor is used for driving the rotary cutting apparatus of claim 1. The rotation of the small blades from the horizontal plane of rotation working in conjunction with the grass guide reduces the size of the blade's cutting area. Additionally, by bending the grass, the grass guide constrains the movement of the grass, thereby making it easier for the plurality of blades to cut the grass. Another advantage is the utilization of a plurality of small blades, which results in a significant

savings in required rotational kinetic energy due to the large reduction in mass of the plurality of blades from that of a conventional lawnmower blade.

13. A lawnmower using the rotary cutting apparatus of claim 1, with its plane of rotation adjustably rotated among or between some or all degrees between 1 and 90 and the grass guide of claim 2, wherein an internal combustion engine is used for driving the rotary cutting apparatus of claim 1. The rotation of the small blades from the horizontal plane of rotation working in conjunction with the grass guide reduces the size of the blade's cutting area. Additionally, by bending the grass, the grass guide constrains the movement of the grass, thereby making it easier for the plurality of blades to cut the grass. Another advantage is the utilization of a plurality of small blades, which results in a significant savings in required rotational kinetic energy due to the large reduction in mass of the plurality of blades from that of a conventional lawnmower blade.

14. A lawnmower using the rotary cutting apparatus of claim 1, with its plane of rotation fixed at a single degree between 1 and 90 and the grass guide of claim 2, wherein an internal combustion engine is used for driving the rotary cutting apparatus of claim 1. The rotation of the small blades from the horizontal plane of rotation working in conjunction with the grass guide reduces the size of the blade's cutting area. Additionally, by bending the grass, the grass guide constrains the movement of the grass, thereby making it easier for the plurality of blades to cut the grass. Another advantage is the utilization of a plurality of small blades, which results in a significant

savings in required rotational kinetic energy due to the large reduction in mass of the plurality of blades from that of a conventional lawnmower blade.

15. A lawnmower using the cutting apparatus of claim 1, wherein a string-like cutting member is substituted.

16. A lawnmower using the cutting apparatus of claim 1, wherein a wire cutting member is substituted.

17. A lawnmower using the cutting apparatus of claim 1, wherein the plurality of small blades are designed aerodynamically to have very little air resistance.